### **ENVIRONMENTAL CHEMISTS**

## Analysis For Total Metals By EPA Method 200.8

Client ID: M07985 Client: Alaskan Copper Works Date Received: M07985, F&BI 111223 11/17/11 Project: Date Extracted: 11/18/11 Lab ID: 111223-01 x10 Date Analyzed: 11/18/11 Data File: 111223-01 x10.049 Matrix: Instrument: ICPMS1 Water Units: ug/L (ppb) Operator: AP

Concentration
Analyte: ug/L (ppb)

Chromium 148
Nickel 98.9
Copper 116
Zinc <10

## **ENVIRONMENTAL CHEMISTS**

# Analysis For Total Metals By EPA Method 200.8

Client ID: Date Received: Date Extracted: Date Analyzed: Matrix:	Method Blank Not Applicable 11/18/11 11/18/11 Water	Client: Project: Lab ID: Data File: Instrument:	Alaskan Copper Works M07985, F&BI 111223 I1-798 mb I1-798 mb.046 ICPMS1
Matrix: Units:	Water ug/L (ppb)	Instrument: Operator:	

		Lower	Upper
Internal Standard:	% Recovery:	Limit:	Limit:
Germanium	101	60	125

Analyte:	Concentration ug/L (ppb)
Chromium	<1
Nickel	<1
Copper	<1
Zinc	<1

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 11/23/11 Date Received: 11/17/11

Project: Metro Self Monitor, M07985, F&BI 111223

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 111230-18 (Matrix Spike)

				Percent	Percent		
	Reporting	Spike	Sample	Recovery	Recovery	Acceptance	RPD
Analyte	Units	Level	Result	MS	MSD	Criteria	(Limit 20)
Chromium	ug/L (ppb)	20	<1	86	84	67-132	2
Nickel	ug/L (ppb)	20	1.58	86	81	73-119	6
$\operatorname{Copper}$	ug/L (ppb)	20	<1	85	80	50-144	6
Zinc	ug/L (ppb)	50	<1	87	83	46-148	5

Laboratory Code: Laboratory Control Sample

Analyte Chromium Nickel Copper	Percent									
	Reporting	$\mathbf{Spike}$	Recovery	Acceptance						
Analyte	Units	Level	LCS	Criteria						
Chromium	ug/L (ppb)	20	98	66-135						
Nickel	ug/L (ppb)	20	100	67-134						
Copper	ug/L (ppb)	20	101	66-134						
Zinc	ug/L (ppb)	50	99	57-135						

#### **ENVIRONMENTAL CHEMISTS**

### **Data Qualifiers & Definitions**

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb · Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- ${
  m jl}$  The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- js The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Charlene Morrow, M.S. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 FAX: (206) 283-5044 e-mail: fbi@isomedia.com

November 23, 2011

Gerald Thompson, Project Manager Alaskan Copper Works 628 South Hanford Seattle, WA 98134

Dear Mr. Thompson:

Included are the results from the testing of material submitted on November 17, 2011 from the Metro Self Monitor, M07985, F&BI 111223 project. There are 4 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures ACU1123R.DOC